ABSTRACT:

The objective of the current study was to establish an efficient and reproducible in vitro plant regeneration protocol using cotyledonary explant for Citrullus lanatus cv. Round Dragon. To achieve optimal conditions for adventitious shoot induction, cotyledon explants of 5-day-old seedlings, 7-day-old seedlings and 9-day-old seedlings were tested for regeneration potential on Murashige and Skoog (MS) media supplemented with 2.3 mg L-1 BAP. Results showed that high frequency of in vitro adventitious shoot regeneration was induced from the proximal region of 5-day-old seedlings (93%) with 19.80±0.99 shoots per responding explant after 6 weeks. Adventitious shoots induced from 5-day-old seedlings after 6 weeks were transferred to MS shoot regeneration medium without plant growth regulator for shoot elongation for 4 weeks. The influence of various concentrations of IBA, IAA and NAA on root initiation was examined on half-strength and full-strength of MS rooting medium. The best response for root initiation was obtained from the microshoots grown in full-strength MS rooting medium compared to the half-strength MS rooting medium. Furthermore, IBA was more efficient in promoting root induction than IAA and NAA, resulting in a higher rate of root initiation (100%) at the concentration of 0.1 mg L-1 IBA. Therefore, elongated shoots were rooted in MS medium supplemented with 0.1 mg L-1 IBA for 3 weeks. Rooted plantlets were acclimatized successfully under ex vitro conditions.